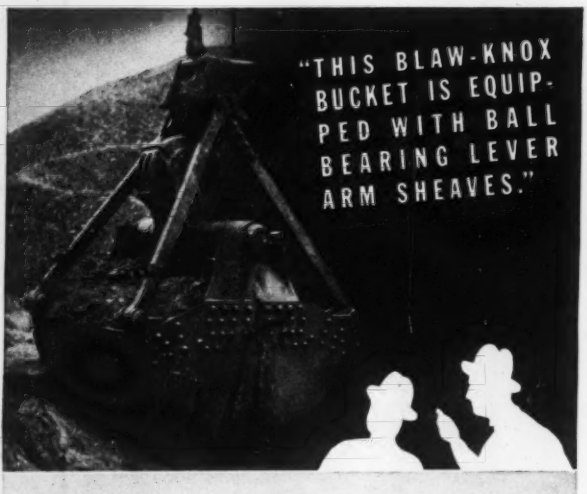
NEWS

Parkchester apartments in New York now 25 per cent complete—see p. 3



As a matter of fact this feature is standard equipment and does not cost more. It is especially desirable where the bucket handles loose granular materials because it keeps lubrication in and dirt out. This and many other desirable features of Blaw-Knox Buckets is fully described and illustrated in Bulletin No. 1606. Write for it today.

17

BLAW-KNOX Digging and Rehandling **BUCKETS**
BLAW-KNOX DIVISION · OF BLAW-KNOX CO · Farmers Bank Bldg. Pittsburgh, Pa.

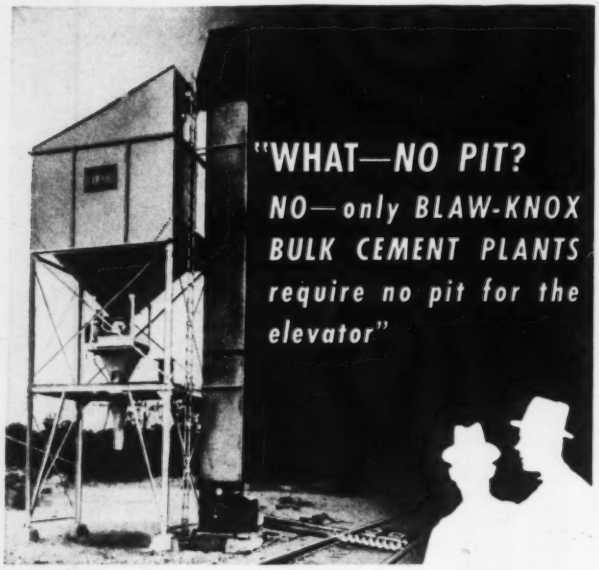
Engineering advice, based on sound experience, is offered as a part of Blaw-Knox service in the design and arrangement of a central mixing plant for your job.

Stationary or floating plants, manual or automatic in operation, have been furnished on hundreds of jobs. Many of them are illustrated in Blaw-Knox Catalog No. 1566.

BLAW-KNOX DIVISION of Blaw-Knox Company
FARMER'S BANK BUILDING PITTSBURGH, PA.
Offices and Representatives in Principal Cities

12

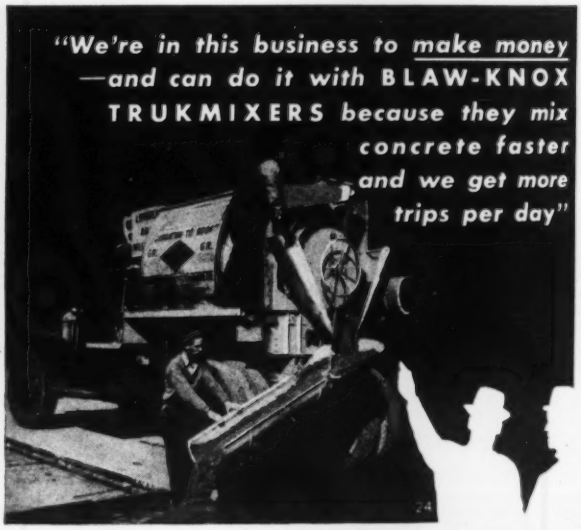
BLAW-KNOX *Central Mixing Plants*



Blaw-Knox BULK CEMENT PLANTS are the ultimate in portability, speed, and convenience of use and operation. They are *complete units* for unloading, storage, batching and handling of bulk cement—dependable and accurate.

21 Completely described in Blaw-Knox Catalog No. 1566. Send for copy.

BLAW-KNOX *Bulk Cement Plants*
BLAW-KNOX DIVISION · OF BLAW-KNOX CO · Farmers Bank Bldg. Pittsburgh, Pa.


"We're in this business to make money —and can do it with BLAW-KNOX TRUKMIXERS because they mix concrete faster and we get more trips per day"

24

It's a comfortable feeling to have truck mixers working for you that perform 100% under all conditions. No breakdowns—no worries.

You make a *profitable investment* when you buy Blaw-Knox Trukmixers and agitators. Write for Catalog No. 1582.

BLAW-KNOX *Agitators and* **TRUKMIXERS**
BLAW-KNOX DIVISION · OF BLAW-KNOX CO · Farmers Bank Bldg. Pittsburgh, Pa.

ENGINEERING NEWS-RECORD

Volume 123 OCTOBER 5, 1939 Number 14

NOTEBOOK NEWS

Quick Surveys of Construction Events

▶ Increased construction activity is reported in the early reports from ENR correspondents. Of chief significance is the fact that the increase appears to be due in large part to better business conditions rather than to war developments.

▶ These indications of increased construction activity check with the weekly compliation of construction statistics on p. 11. Private awards are well over last week and the total for the year is 13 per cent ahead of last year, the increase being largely in industrial building.

▶ Architects and manufacturers in the building field meeting in Washington last week centered their attention on means for stimulating mass housing as a field having great possibilities.

▶ Into the technical deliberations of the architects, Robert D. Kohn, noted individualist of the architectural field, dropped a bomb when he proposed to solve the labor difficulties of the building industry by setting up a vertical union including everyone from the chief architect to the water boy. The architects voted to study the matter.

▶ Revising the trend toward public operation and ownership of waterworks, a committee of citizens at Louisville, Ky., has recommended that the city engage a private company to operate the city-owned and operated waterworks system. Major economies are predicted if the change is made.

▶ A warnote is found in a notice from our contemporary in London. *The Engineer*, that its production facilities have been moved out of the city.

Cover photo by McLaughlin Air Service

Kaufmann and Fabry

R. H. FORD RETIRES

ROBERT H. FORD, chief engineer of the Rock Island Railroad since 1931, retired Sept. 30 after 27 years of service with that road. A graduate of Norwich University in 1892, he served with the Central Vermont and Missouri Pacific lines before going with the Rock Island in 1912. The Rock Island's grade revision project in southwestern Kansas, one of the largest railroad construction jobs in recent years, was completed under his direction. He is a past president of the American Railway Engineering Association.

• • •

City Housing Act Upheld For Orlando, Florida

The Florida supreme court last week upheld the validity of the housing act of Orlando, Fla., an act by which the city had set up an authority to eliminate unsanitary negro dwellings. At issue was the question of the right of the city to eliminate unsafe and unsanitary dwellings and to construct about 235 houses for rental to negroes at low cost.

The case has been appealed from the circuit court which dismissed the case.

Construction Work Gains Sharply

Increased construction shown by reports, shortage of WPA labor and wider employment

Widely scattered gains in construction and much increased employment is shown in a survey conducted by *Engineering News-Record* correspondents. The survey was inaugurated chiefly to get an initial check as to the effect of actual or potential new business growing out of the war in Europe, and while some of the new business comes from that source, much of it is due to a general improvement in business condition that is quite independent of the war. Secondary effects include a growing shortage of skilled mechanics

(*Continued on p.* 3)

• • •

Maryland May Lose Federal Road Funds

The Maryland State Roads Commission has been warned by representatives of the Public Roads Administration that the commission might lose the greater part of $2,670,000 in unexpended federal funds if steps are not taken to utilize the money for road projects as originally planned. The money is the unused balance of special funds appropriated by the federal government since 1936, federal officials making specific reference to the remainder of appropriations for 1938 and 1939.

A total of $1,700,000 in federal funds was made available for Maryland road projects this year. Up to the present only $18,000 of that amount has been put to use. Also, this year's federal feeder road appropriation of $200,000 and the regular federal grade crossing elimination fund of $500,000 remain untouched.

Present state highway projects now under way in Maryland's 23 counties total $4,360,000, according to Ezra B. Whitman, state roads commission chairman.

ENGINEERING NEWS-RECORD—Published every Thursday by McGraw-Hill Publishing Company, Inc. Publication Office, 99-129 North Broadway, Albany, N. Y. Editorial and Executive Offices, 330 W. 42nd Street, New York, N. Y., James H. McGraw, Jr., President; Howard Ehrlich, Executive Vice-President; James H. McGraw, Honorary Chairman; Mason Britton, Vice-Chairman; B. R. Putnam, Treasurer; D. C. McGraw, Secretary; J. E. Blackburn, Jr., Director of Circulation. Subscription rates in the United States, Canada, Mexico, Central and South American countries, $5 a year; all other countries, $9, or 54 shillings a year. Entered as second-class matter October 29, 1936, at the Post Office at Albany, N. Y., under the Act of March 3, 1879. Printed in U. S. A. Copyright 1939, by McGraw-Hill Publishing Company, Inc. Cable address: McGRAWHILL, New York. Member A.B.P. Member A.B.C.

Housing Discussed By Architects

Expansion of building activity forecast. Robert D. Kohn proposes a vertical union

Promotion of rehousing and the expansion of building activity were foremost subjects of discussion at the 71st convention of the American Institute of Architects and the semi-annual meeting of the Producers' Council, an affiliated organization of manufacturers, held in Washington Sept. 25-28. Support and extension of a subsidized housing program was advocated in resolutions adopted by the architects. Steady growth of building was forecast, and several speakers emphasized particularly the rising trend in private construction as central feature of recovery.

Reporting to the architects on housing, a committee headed by Walter R. McCornack said that a 50-year program of building 10,000,000 new homes is needed to provide decent housing in the United States. It charged that costs have been raised by lack of improvement in distribution methods, suppression of patents, failure to liquidate obsolete plants, and related causes. Resolutions on housing adopted by the convention condemned practices that raise labor and material costs.

A forecast of increased building activity was made by the committee on industrial relations. "The most impressive crescendo in the construction industry should occur in the field of private enterprise," the report stated. A bull market might "stimulate the erection of large-scale housing, industrial and residential construction, alterations and remodeling." However, some unfavorable influences of war conditions were suggested by A. C. Holden, especially the rise of interest rates.

Vertical union proposed

A vertical building union was suggested by Robert D. Kohn in a resolution adopted by the convention:

> Resolved, That it is desirable for the committee on housing not only of the Institute but of the chapters to study the process of building to see whether some other type of relationship not only of labor with labor but of the architects with labor (because we are all part of the same process) may be found which will consider the whole procedure of building as one process in which many contribute rather than as a series of separate contributions to a large whole.

Edwin Bergstrom, Los Angeles, was elected president, succeeding Charles D. Maginnis, of Boston. Walter R. McCornack, dean of the school of architecture of Massachusetts Institute of Technology, was elected vice-president of the Institute.

Housing was discussed before the Producers' Council in an interesting address by Sir Raymond Unwin, London, England. After citing figures and experiences on low-income housing in Great Britain he pointed to the fact that current housing in the United States is beyond the reach of two-thirds of the population.

An active building extension program has been initiated by the Producers' Council under the general chairmanship of R. G. Creviston, Crane Co., with R. T. Tree, Carrier Corp., chairman of the industrial section, and H. M. Shackelford, Johns-Manville Corp., chairman of the domestic section.

Changes in Building Code Proposed at Winston-Salem

A proposed amendment to the municipal building code now before the board of aldermen at Winston-Salem, N. C., would require that heating and mechanical ventilating systems be installed to conform with "the requirements of good practice" as outlined by the American Society of Heating and Ventilating Engineers.

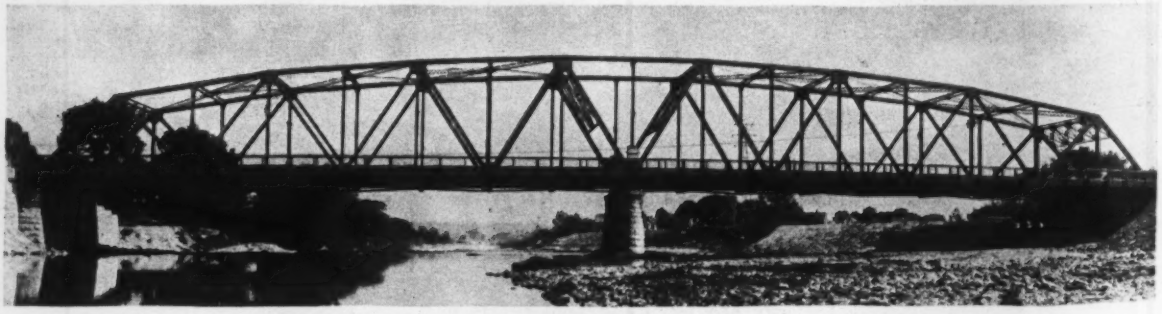
The ordinance would apply specifically to all oil-burning and inflammable-liquid burning systems, warm air heating units and air conditioning and ventilating equipment. Special permits for the installation of heating and ventilating equipment would be required, tanks with a capacity of 60 gal. or more of inflammable liquids would have to be approved by the Underwriters Laboratories, Inc., and all rules of the National Board of Fire Underwriters would be incorporated in the ordinance.

• • •

Buffalo Starts $9,000,000 Sewer Construction Program

The Buffalo, N. Y., Sewer Authority on Sept. 25, by approving commitments of approximately $3,000,000, took the first step toward launching a $9,000,000 storm relief sewer construction program. By Dec. 15 the engineering division will have plans ready for projects totaling $5,200,000, according to Harold Epstein, general manager of the authority.

The total expenditure will be spent over a 3-year period at the rate of $3,000,000 annually.



NEW BRIDGE REPLACES MASSACHUSETTS SPAN BUILT IN 1880

To replace an old iron bridge constructed in 1880, a new bridge, a continuous structure with two spans each 185 ft., has been built at Westfield, Mass., on College Highway. It provides a roadway width of 40 ft. with two 6-ft. sidewalks outside the trusses, most of the main truss members being of silicon steel. The old bridge was moved 53 ft. sideways and supported at each end on new pile bents to serve as a temporary bridge during construction. The old abutments were used as retaining walls, new concrete piers being built in front of each of the abutments to carry the outer ends of the bridge.

Total cost of the work was $224,000, PWA contributing 45 per cent, with the remainder provided by the State of Massachusetts, Hampden County and the City of Westfield. It was built under the authority of the City of Westfield, Oren E. Parks, superintendent. Fay, Spofford & Thorndike were the designing and supervising engineers and Daniel O'Connell's Sons, Inc., Holyoke, Mass., was the general contractor. The steel structure was furnished and erected by the Bethlehem Steel Co.

Largest Housing Project One-Quarter Finished

Metropolitan Life Insurance Co.'s Parkchester Apartments in New York City, the world's largest single housing development, is now a quarter of the way toward completion. As is shown on the cover of this number, some buildings are in the white plaster stage, while others are merely excavations. At the present rate, Metropolitan officials expect that the first tenants will move in next March. Complete occupancy is scheduled for mid-1941.

Occupying a site of 130 acres, the project includes 51 fireproof buildings containing 12,269 apartments and 42,471 rooms. The apartments will house 42,000 people. Building heights average 7 and 8 stories, with some up to 12 stories to relieve the skyline of any possible monotony. The development is to be in effect a self-contained community, with stores, theaters, local shopping centers, garages and central heating plant (shown in upper left of cover.) Parks and outside recreational facilities will occupy almost three-fourths of the area, as land coverage by buildings is only 27.4 per cent. George Gove, for ten years secretary of the New York State Board of Housing, is general director of the project for Metropolitan.

• • •

Construction Gains

(*Continued from p. 1*)

for WPA work, failure to sell public bonds at the low interest rate prevailing in recent months because of the prospect for higher yield on the money, and a scarcity of bidders on big construction jobs due to uncertainty as to future wage rates.

In Texas, architects and building contractors found their work during August heavier by almost a fourth, as building permits climbed sharply. Chambers of Commerce in 40 representative Texas cities reported that August permits totaled 22 per cent more than in July.

WPA projects affected

In Pennsylvania a shortage of WPA labor for highway work is retarding the highway department's $42,000,000 WPA road improvement program and may cause postponement of much of the work if additional labor is not available before cold weather, according to I. Lamont Hughes, secretary of highways.

Robert S. Beightler, Ohio state highway director, reported work continuing in a satisfactory manner on secondary highway improvements in conjunction with WPA but believed that with the present increase in employment in industrial plants as a result of the steel activity, there may be a general collapse in WPA within a few months in his state.

Bonds not sold

At Louisville, Ky., the bridge commission last week received no bids when it attempted to sell a 2½ per cent revenue bond issue to replace 3 per cent issue on the municipal bridge. Brokers stated that interest rates have increased to such an extent that the proposed issue held no attraction.

Contrasting to the shortage of labor in many other parts of the country, in Arizona additional WPA activity is being experienced with completion of PWA projects.

Arizona material men report an increase in orders for construction materials and equipment, with some buyers admitting the purchases are solely as hedging against expected price increases.

Industrial plant expansion

Reports and communications reaching Washington, D. C. indicate an active period of industrial plant expansion. Most of the additions contemplated are actuated by the belief that construction costs will increase. It is also realized that our entry into the war would bring priority complications. Little use of old factory buildings is anticipated, expansion for the most part calling for new buildings.

Steel production increases

At Steelton, Pa., the Bethlehem Steel Co. is making ready to put into service several more open hearth furnaces. A portion of the 22,000-ton order for steel rails placed by the Pennsylvania R.R. with the Bethlehem Co. will be manufactured at the Steelton plant. The Lukens Steel Co., a producer of finished steel and other steel products, announced a price increase of $5 a ton. The rise is attributed to the increased cost of raw materials, particularly iron and steel scrap. The Republic Steel Corp. has announced that it will spend $3,000,000 for expansion and plant improvement purposes. The program calls for redesigning and rebuilding one of the blast furnaces in its Buffalo, N. Y. plant, the furnace not having been used in recent years.

At Birmingham, Ala., Alabama steel mill officials reported that steel production in that state was 86 per cent of plant capacity, recent additional rail and car orders to the amount of $3,500,000 having been received.

Construction of a $4,000,000 power plant at Macon, Ga., has just been authorized by the Commonwealth & Southern Corp., also the addition of new units at some of its plants in the central west.

Private Management Studied For Louisville Waterworks

The American Water Works & Electric Co., Inc., has been selected by a special committee of leading citizens of Louisville, Ky., to take over the supervision and management of the city's municipally owned waterworks. Appointed several months ago by the mayor of Louisville to make a thorough study of the municipal water system, the committee reported last week that the city was not obtaining a proper return from the water system and that "excessive operating expenses and an unbalanced rate schedule" were responsible.

Invited to make a preliminary study of the system, the American Water Works & Electric Co., reported "very substantial savings could be effected" in operation of the system under private management.

The citizens' committee set $20,000,000 in excess of the bonded indebtedness outstanding against the utility as its value. At present the city-owned property is controlled by the board of waterworks, consisting of the mayor and four other members appointed by him, but it is operated under the name of the Louisville Water Co.

• • •

Mississippi Road Work Not to be Halted

The Reconstruction Finance Corp. has assured the state officials of Mississippi that the state's road construction program will not be halted by failure to sell bonds to finance the work. The highway department advertised a $5,000,000 issue twice, but rejected all bids because of increasing interest rates as a result of the European war.

Governor White has announced that the RFC would buy the bonds (gasoline revenue notes) at 3½ per cent interest providing an acceptable bidder is not received at the next opening. In addition the RFC tentatively agreed to accept the remaining $16,000,000 in notes at a discount to yield 4 per cent interest.

• • •

New Power at Safe Harbor

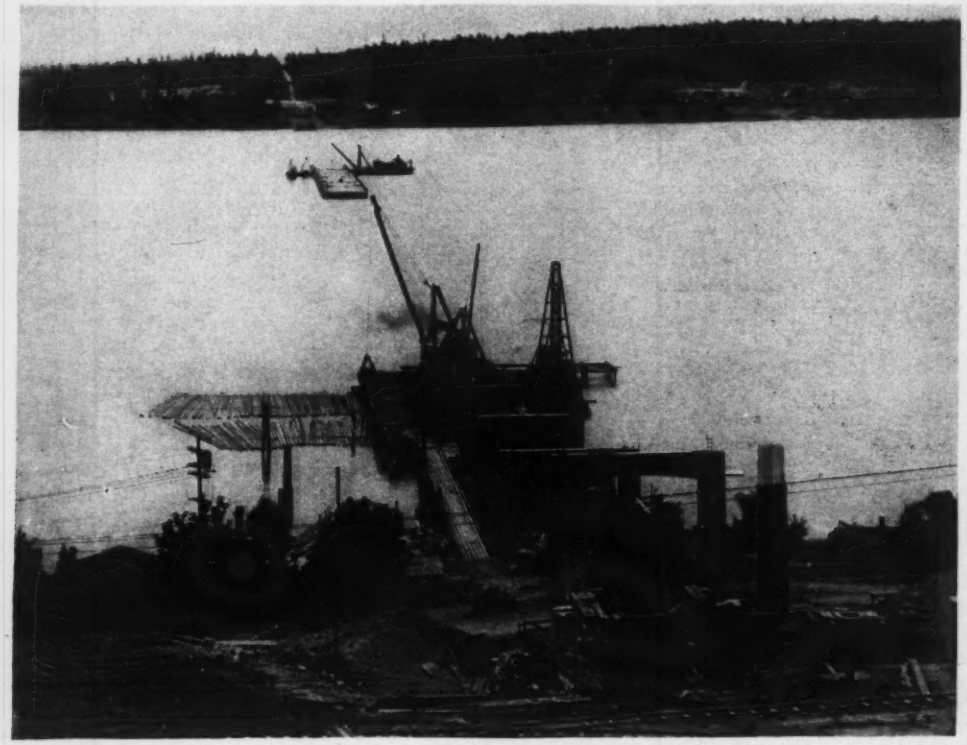
A report on the proposed expenditure of $1,500,000 for new work at the Safe Harbor water power plant on the Susquehanna River published in these pages last week was incomplete in that it did not state that the new unit is to be a single-phase generator. The single-phase capacity is to be increased 25,000 kw, bringing it to 73,000 kw. This power is to be supplied to the Pennsylvania R. R. The total capacity of the plant is 255,000 hp.

Rapid Construction Progres On Pontoon Bridge at Seatt

REMOVING A CONCRETE FORM UNIT from the eighth pontoon in one of the two drydocks. Note arrangement of hoisting rig that lifts two form panels clear before the opposite pair of panels is moved. Each form unit is completely assembled before placement in the pontoon but is taken apart in the removal process.

POURING CONCRETE in pontoons for the Lake Washington bridge has been advancing ahead of schedule at a pace commensurate with turning out four pontoons a month. Pontoon No. 7 was launched on Aug. 29 and Pontoon 8, in which the first concrete was poured the same day, was scheduled for launching the following week. The present pouring schedule is shaped toward completing the 26 pontoons about March 1, depending somewhat on weather during the winter. No difficulty has been encountered in the general processes and none is anticipated. Before the first of September three pontoons were in line out on the lake with cables to permanent anchors, and it was planned that the pontoons would be connected to one another shortly. Pontoon Bridge Builders, Inc., is contractor.

On the tunnel at the west of the bridge, by Sept. 1 the contractor, Bates & Rogers Const. Corp., had overcome difficulties in getting underground and had completed the first 40 ft. of lining in each of the twin bores. At that time progress at the tunnel headings was about 6 ft. per day and the plan was to go 100 ft. beyond the lining before removing the core and placing more lining. Prior to Sept. 1, all lining had been placed with temporary forms; the steel forms, designed for use after core removal, had not yet been taken underground. Material encountered was hard, blue clay which could be removed with air-driven spades. Conditions were improving as increased hardness was encountered.



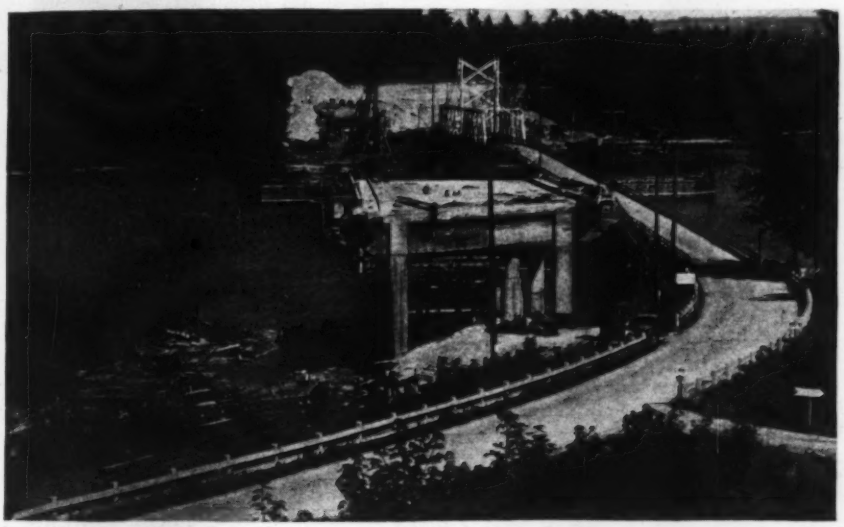
THREE PONTOONS anchored in position in Lake Washington. West approach structure in the foreground. Roadway goes over hill in distance. Water depth is 150 to 200 ft. over most of the 7,800 ft. of the lake distance. Beneath the water is a bed of soft mud as much as 100 ft. deep.

On the west approach to the pontoon bridge the last pier was under construction on Sept. 1 by General-Columbia Const. Co., scheduled for completion by the end of the month at which time west approach steel erection was to start.

On the east crossing, beyond Mercer Island, piers are nearing completion by the Puget Const. Co. and steel erection is expected to start not later than Dec. 1. The long viaduct at the extreme eastern end of the project was 90 per cent completed on Sept. 1 at which time the project as a whole was about 25 per cent complete.

The work is being done by contract in eleven units under direction of the Washington Toll Bridge Authority, L. V. Murrow, chief engineer, and Chas. E. Andrew, principal consulting engineer.

ASSEMBLY OF STEEL FORMS for double-barrel tunnel lining at portal near west approach to Lake Washington Bridge.



BRIDGE over channel at east side of Mercer Island in construction stage Aug. 30. Principal item in this 1,355-ft. unit of the job is a 215-ft. steel arch span.

PROGRESS on Mercer slough viaduct, east of Lake Washington crossing, Aug. 29. Total length of the four-lane road on Mercer Island is 14,314-ft.

MEN AND JOBS

D. W. COLE, member of the Phoenix Engineering Corp., New York, has retired and taken up residence at Marietta, Ga. A veteran of railroad construction, beginning 1884, in the Rocky Mountain and Midwest region, Cole afterwards engaged in municipal waterworks construction at Boston, Waterbury, Conn., New York City and other eastern cities. This was followed by 15 years in the U. S. Reclamation Service during its earlier activities, Cole being employed on the construction of Shoshone Dam in Wyoming, Lahontan Dam in Nevada, and various other projects in the northwestern states. During the last 16 years his activities have been devoted to engineering works accessory to power development throughout the United States and in foreign countries.

CARL L. STEVENSON of Lubbock, Tex., has been reappointed for a six-year term on the Texas state board of registration for professional engineers. ALLYN F. MITCHELL of Corsicana, Tex., has been appointed to fill the place held formerly by W. W. Trout of Lufkin. Other members of the state board are: George R. Brown, Houston; Fred Righter, San Antonio; Ed C. Conner, Dallas, and J. S. Hudnall, Tyler. Fred S. Righter is secretary with offices in Austin.

MAJOR THERON D. WEAVER, in charge of the Bonneville, Ore., district of the U. S. Army Engineers for the past two years, is being transferred to Washington, D. C., where he has been assigned to the office of Louis Johnson, Assistant Secretary of War. Major Weaver took over administration of the Bonneville dam in July, 1937, and under his direction the north end of the dam, the fish ladders, units 1 and 2 of the power house and the shiplock were completed. His successor has not yet been named.

FRANK A. BANKS, acting administrator for the Bonneville project, has returned to Grand Coulee dam as chief construction engineer for the Bureau of Reclamation. Banks has declined the position of administrator for Bonneville, preferring to return to Grand Coulee to work on construction.

MARMION D. MILLS has been appointed by the Seattle, Wash., municipal transportation commission to act as general transit consultant to direct rehabilitation of the street railway system. An engineer with the Washington State Highway Department at the time of the last world war broke out, he entered the U. S. army to serve as chief of the transportation branch, supply division, First Army, A.E.F. Since 1924 he has been associated with private transportation firms and surveys, superintending the reconstruction of transportation systems in 21 cities. He had been conducting an independent survey of the Seattle transportation system since 1938.

MILTON W. BREIVOGEL, resident engineer of planning for Madison, Wis., has been recalled by the city of Racine, Wis., to resume his old work as director of city-sponsored WPA projects. Breivogel was assistant planning engineer in Milwaukee before he went to Racine and is responsible for Racine's present long range WPA program.

ARTHUR R. WELLWOOD, resident engineer for Murray & Flood and in charge of all field engineering and construction on the Saluda Dam power development near Columbia, S. C., has been named executive director of the Housing Authority at Columbia. Wellwood in the past has worked as construction engineer, superintendent and district operating manager of the Central Hudson Gas & Electric Co. and as chief engineer for the South Carolina power rate investigating committee. He was also once a regional director in making an electric rate survey for the Federal Power Commission.

C. A. CHIPLEY, formerly resident engineer with the Texas State Highway Department at Fort Worth, Tex., has resigned to become associated with the R. W. Briggs & Co., contractors, Pharr, Tex.

JOHN B. BLANDFORD, JR., general manager of TVA since 1937 and an expert on government administration, has been appointed by President Roosevelt as assistant director of the Budget Bureau. From 1931 to 1933 he was director of public safety in Cincinnati, Ohio, after heading Cincinnati's bureau of government research. At one time he was also research director of the Newark, N. J., Chamber of Commerce. Being a member of the staff of the National Institute of Public Administration in New York City is another position he once held.

CECIL F. BOULDEN, structural engineer for the Portland Cement Association in Texas during the past seven years, recently resigned to accept the position of chief engineer in the main division of the Texas Railroad Commission at Austin, succeeding JOHN G. TURNEY. Turney has resigned to become assistant director of public works in the city of Houston. Both men are civil engineering graduates of the Texas Agriculture and Mechanical College.

C. V. NORRED, JR., senior materials engineer for the division of tests, Tennessee State Highway Department, has been chosen to succeed T. E. AKERS, who has been material engineer at Jackson for the past ten years. Norred has been with the Tennessee Highway Department eleven years and will make his headquarters at Jackson. Akers resigned to go with T. L. Herbert & Sons Co., Nashville.

DONALD G. ROSS, former resident engineer of the St. John, N. B., Harbor Board, has been made chief engineer, maintenance-of-way, for the Newfoundland Railway at St. Johns, Newfoundland.

HARRY DAVISON and CHARLES W. LIPPHARDT, both of Middletown, Ohio, have been appointed assistant engineers in the Ohio state highway department.

GLEN L. PARKER, district engineer for the U. S. Geological Survey at Tacoma, Wash., has been appointed chief hydraulic engineer for that organization, succeeding N. C. GROVER, retired. Parker has been with the Geological Survey since 1909.

W. D. BARROWS, chief engineer of the Kentucky State Highway Department, has been appointed a member of the Board of Registration for Professional Engineers in Kentucky, succeeding THOMAS H. CUTLER, whose term ended June 7.

ANGUS SMITH, civil engineer, has resigned as city engineer of Sarnia, Ont., a position he has held since 1933. Smith was once city engineer of Regina and designed the sewage-disposal plant at Riverside, Ont.

JOHN SHELFORD, engineering graduate from the University of Illinois, and holder of a master's degree from Cornell University, is now working as junior engineer at the U. S. Engineer's Office at Huntington, W. Va., on the Ohio Valley flood control work being carried out by the Army engineers. Previously, he was with the Michigan State Highway Department at Lansing as bridge designing engineer. Before that he worked as structural designer for the Sinclair Refining Co., East

Chicago, Ind., and the B. F. Goodrich Co., Akron, Ohio.

MEETINGS

AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS, Richmond, Va., Oct. 9-13.

PUBLIC WORKS CONGRESS, annual meeting, American Public Works Association, Pittsburgh, Pa., Oct. 9-11.

INSTITUTE OF TRAFFIC ENGINEERS, 10th Annual Convention, Atlantic City, N. J. Oct. 14–17.

MISSISSIPPI VALLEY ASSOCIATION, annual meeting, St. Louis, Mo., Oct. 15-17.

NATIONAL SAFETY COUNCIL, 28th National Safety Congress and Exposition, Atlantic City, N. J., Oct. 16–20.

AMERICAN INSTITUTE OF STEEL CONSTRUCTION, 17th Annual Convention, Waldorf-Astoria Hotel, New York City, Oct. 17–18.

AMERICAN PUBLIC HEALTH ASSOCIATION, annual meeting, Pittsburgh, Pa., Oct. 17-20.

AMERICAN SOCIETY OF SAFETY ENGINEERS, annual meeting, Atlantic City, N. J., Oct. 18.

AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS, fall meeting Atlanta, Ga., Oct. 30-31.

NATIONAL RECLAMATION ASSOCIATION, annual convention, Denver, Colo., November 14-16. Directors meeting Nov. 12-13.

REGIONAL AND LOCAL

AMERICAN WATER WORKS ASSOCIATION, section meetings: Reading, Pa., Oct. 5–6; Morgantown, W. Va., Oct. 12–14; Dallas, Texas, Oct. 16–19; Atlantic City, N. J., Oct. 20–21; San Francisco, Oct. 25–28; Madison, Wis., Oct. 30–Nov. 1; Utica, N. Y., Nov. 2–3; Charlotte, N. C., Nov. 6–8.

NEW YORK STATE SEWAGE WORKS ASSOCIATION, fall meeting, Olean, N. Y., October 6-7.

MISSOURI SOCIETY OF PROFESSIONAL ENGINEERS, annual state convention, Joplin, Mo., October 6-7.

CLEVELAND ENGINEERING SOCIETY, Cleveland, Oct. 10.

CENTRAL STATES SEWAGE WORKS ASSOCIATION, annual meeting, Chicago, Ill., Oct. 12-13.

AMERICAN WELDING SOCIETY, Pittsburgh Section, opening meeting of the 1939-40 season, Mellon Institute, Pittsburgh, Pa., Oct. 18.

ILLINOIS STATE DEPARTMENT OF PUBLIC HEALTH, Water Treatment Plant Operators, annual conference, Springfield, Oct. 25-26.

AMERICAN SOCIETY OF REFRIGERATING ENGINEERS, Air Conditioning Conference, Lehigh University, Bethlehem, Pa., Nov. 10–11.

ELECTIONS AND ACTIVITIES

CHARLES F. FOX, Wilkinsburg, Pa., was elected chairman of the Western Pennsylvania section of the American Water Works Association at its recent annual convention. Other officers elected were: J. B. Lechner, of Erie, vice-chairman; Earl P. Johnson, of Pittsburgh, secretary-treasurer; Chester Drake, of Pittsburgh, Arthur Martin of Oil City, and Myron G. Mansfield, of Pittsburgh, trustees, and E. C. Trax of McKeesport, director.

THE NORTH CAROLINA Section of the American Society of Civil Engineers held its annual fall meeting at Charlotte, N. C., Sept. 18. After the morning business sessions the group was entertained at luncheon by the Charlotte Engineers Club, speakers including Col. Raymond A. Wheeler, Washington, D. C., resident member of the board of engineers for rivers and harbors, C. S. Duncan, Washington, D. C., economist with the Association of American Railways, and J. B. Marshall, Charlotte city manager. Colonel Wheeler complimented the engineers of North Carolina for their cooperation with the federal government on North Carolina waterway projects, which he said were paying for themselves. Duncan presented a paper on "Transportation" in which he stated "Railroads are essential to our economic welfare and national defense." He declared further that the traffic is not sufficient to support all methods of transportation and that coordination of the various agencies is needed. "Some Engineering Problems of a City" was Marshall's subject. Total attendance was 200, including engineers from all sections of the state. New officers will be elected next spring.

THE MICHIGAN SECTION of the American Water Works Association, at its joint session with the Michigan Conference on Water Purification ending September 22, elected R. J. La Marre, of Detroit, as chairman. Other new officers are: Leo. E. McQueen, Coldwater, vice-chairman; Maurice N. Gerardy, Detroit, re-elected secretary-treasurer; George H. Fenkell, Detroit, Raymond J. Faust, Lansing, H. H. Caswell, Ann Arbor, and Cyrus R. Bird re-elected directors.

THE ENGINEERS CLUB of western North Carolina, at a meeting in Asheville, September 18, heard R. L. Crow of the Jeffrey Manufacturing Co., Columbus, Ohio, as their principal speaker. Crow described the conveyor system at Grand Coulee Dam. Committee chairman named for the coming year included: Joseph R. Gill, publicity; P. W. Frisk, social; R. B. Fuller, membership, and Charles E. Waddell, engineering education.

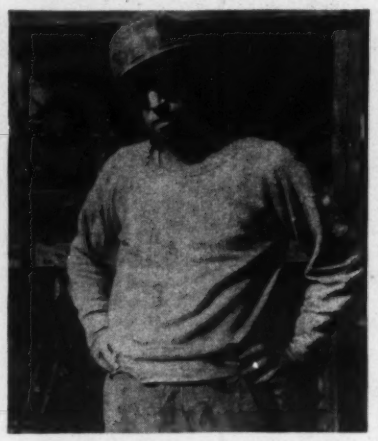
Link Belt Photo

WELDING SOCIETY OFFICIALS WATCH SHOVEL BOOM ASSEMBLY

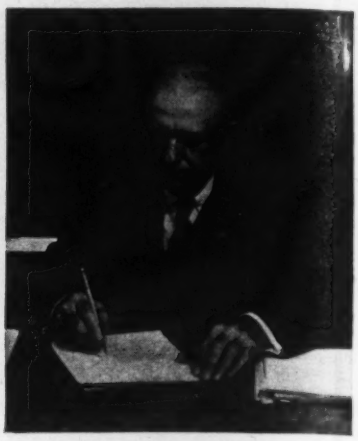
SHOWN WATCHING the welding of a huge assembly which will serve as a boom for a 1¼ yd. shovel, left to right, are Eugene A. Balsley, chairman of the Chicago Section of the American Welding Society, and Harry G. Boardman, national president of the society. Welding engineers and production executives of metal-fabricating plants from all over the nation will view the assembly when they get together in Chicago during the week of Oct. 23-27 at the society's 20th annual meeting.

Made by welding steel sections flame-cut from plate, the boom is said to be 30 per cent lighter than the riveted design previously used for this member.

A diver inspects his measuring stick. **Frank Heffling** uses this 30-in. bronze ruler to make measurements during his underwater inspection of the 70-year old breakwater in Chicago Harbor. Three-quarter-inch lugs project from the rod at 3-in. intervals to enable Heffling to measure dimensions by feel. The lugs are soldered into drilled holes. In the background is seen Chicago's Navy Pier.



After breaking every shield tunneling record that ever existed in driving various sections of the Detroit interceptor sewer tunnels, **Harvey Kruse** is now showing Chicago how to drive subway tunnels. Not so fast this time, for they wouldn't give him a shield and he has to stop and erect steel and liner plate ground supports as he goes along. He is superintendent for M. J. Boyle & Co. on the Clybourne Ave. section.



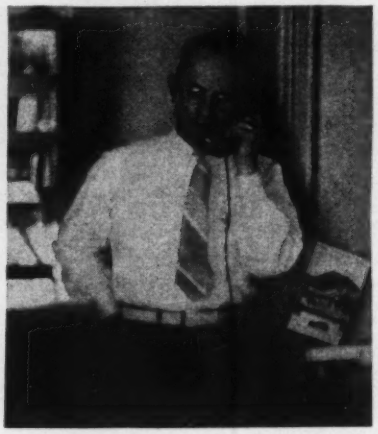
With the Bureau of Reclamation since 1936, **Samuel F. Crecelius** is no newcomer to government service. He began his career with the army engineers, retiring in 1919 with the rank of colonel. Between then and 1936, consulting, highway and municipal engineering held his attention. At present he is construction engineer in charge of Green Mountain Dam in Colorado.

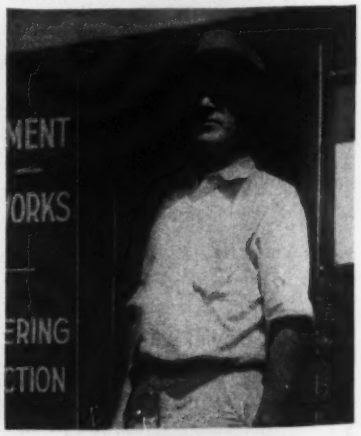
MEN AT WORK

Seattle, alert to the advantages of having an engineer look after municipal housekeeping affairs, has selected as its new chairman of the Board of Public Works, **W. C. Morse,** superintendent of the city's water department. He was city engineer while the Skagit power project was in its early stages, has had long experience in consulting engineering, and hopes to use this background in bringing Seattle's water department to a new efficiency.

E. O. Larson is construction engineer for the U. S. Bureau of Reclamation in charge of the Deer Creek project, which will store water on Provo River for irrigation and for the Metropolitan Water District of Salt Lake. He says that the job is 30 per cent complete in 25 per cent of the allowed time. An *ENR* editor, homeward bound from the San Francisco Am. Soc. C. E. meeting, caught him off guard in his office, which is located in Provo, 12 mi. from the dam.

Carl G. Riggenbach, resident engineer for the Chicago department of public works on the construction of the 79th St. filter plant, inspects the work from the engineer's boat. Present operations include the construction of 2,600 ft. of rock breakwater and a cofferdam enclosing an area 1,050x1,600 ft. The cofferdam consists of a steel sheetpile diaphragm to rock, a clay core and limestone cover and outside face paving.





Texas Sues Cement Firms On Anti-trust Charges

The Attorney General of Texas has filed suit in the 53rd district court of that state against the San Antonio Portland Cement Co. and the Longhorn Portland Cement Co., both of San Antonio, for alleged violation of the anti-trust laws. The suit alleges that the defendant companies have agreed among themselves and with other companies operating in the state to set uniform prices and terms and conditions of sales, thereby restraining free competition.

The suit asks that the charters of the two companies be forfeited, that receivers be appointed to bring to a close the companies' affairs and that penalties of $50 to $1,500 a day from Jan. 1, 1930 to date of filing of the petition be assessed against the two firms.

• • •

Financing Plan Prepared For Niagara Falls Spans

New plans for financing the building of the proposed $3,600,000 Rainbow bridge at Niagara Falls, N. Y., are now being prepared and will be announced shortly, according to Ellison Kaumeyer, secretary of the Niagara Falls Bridge Commission. The action follows the failure of any bidders to submit proposals for the bond issue as offered at Buffalo Sept. 26, failure being attributed to the fact that the national legislation granting permission for the span contained a clause providing for taxation of the bonds as well as the income from the bridge; also the unsettled state of the bond market at the time was another deterrent. The new bond issue is expected to be $3,000,000; the total cost of the bridge is estimated at $3,620,000, with $1,280,000 to be spent for the arch span, $560,000 for the approach spans, $30,000 for the lighting system, and $396,000 for the plazas, bringing the total construction cost to $2,266,000.

Estimates are that the bridge would have a gross revenue of $400,000 annually, the old Falls View bridge having had a gross revenue of $321,000 in 1937, the last year of its operation.

• • •

Suit to Test Legality Of St. Louis Housing Act

Suit to test the legality of tax exemption features of the St. Louis Housing Authority ordinance has been filed in the Missouri courts by the Laret Investment Co., a real estate holding concern. The suit charges the tax exemption clause of the ordinance would result in placing upon the plaintiff and similar taxpayers a disproportionate part of the tax burden. Attorneys representing the Laret Company said that the suit is in the nature of a test action.

The city has filed a demurrer attacking the petition on the ground that it fails to state facts sufficient to constitute a cause of action. The provision in controversy binds the city not to levy any taxes, service fees, charges or tolls against the housing authority or any of its projects during the useful life of such projects.

Sovfoto

CONSTRUCTION OF RUSSIAN CANAL ENGAGES 160,000 WORKERS

STATED TO HAVE completed the 20-mi. "Lyagan" canal in thirteen days, 160,000 Russian workers are now engaged in building a canal 167 mi. in length to irrigate 87,000 acres in Fergana Valley. The new project is expected to take a total of six months with 3,000 engineers and technicians being employed. Work to be done includes 23,000,000 cu.yd. of earth excavation, placement of 17,000 cu.yd. of concrete and laying 665,000 cu.yd. of stone.

Tunnel Bid Dearth Explained by U.S.B.R.

Other reasons than war given for unsatisfactory bidding on Continental Divide Tunnel

Failure of the Bureau of Reclamation to obtain satisfactory bids on the Continental Divide Tunnel of the Colorado-Big Thompson project (*ENR*, Sept. 28, 1939, p. 33) is attributed by Commissioner of Reclamation Page partly to the war situation. Other factors, however, were involved, he points out, including the difficulties experienced by builders of the Moffat Tunnel and the labor troubles on Green Mountain Dam, part of the same project.

Potential bidders on the Continental Divide job would be especially worried by war uncertainties because of the very long construction period, and this is in fact the first project on which such hesitation has showed up. A satisfactory number of bids was received, the commissioner says, on Friant Dam early last month.

Because of the large size of its jobs, the Bureau of Reclamation is generally considered particularly vulnerable to war fears on the part of the contractors. This is to some extent the case, Commissioner Page, agrees, but he points out on the other hand that the bureau regularly furnishes all materials. The contractor thus has to bear only the risk of labor shortages and wage increases and of increases in the price of his equipment.

The remaining risks, however, are substantial, and Page can see some equity in the demand now being made that clauses be inserted in contracts to relieve contractors of some of the danger. He points out though that this is not a matter for decision within his department. The bureau must use the standard form of contract which is established by the Procurement Division of the Treasury, in consultation with representatives of contracting agencies. Thus, even if a labor shortage became so acute that a contractor found it impossible to do the work on time, Page would have no choice but to assess penalty charges.

If, in view of these risks, contractors' bids rose too high, it might be necessary to curtail the construction program, since reclamation costs are limited to the amount which it is believed can be repaid by water-users. Reclamation has continued in the past through considerable fluctuations of costs, but Page points out that project costs are now closer to the limit of repayability than previously—the cheap projects having already been built.

OBITUARY

LESTER G. BAYLY, 57, senior highway engineer with the Public Roads Administration, died Sept. 22. Bayly graduated from Rensselaer Polytechnic Institute in 1907 and was employed by the New York department of public works from shortly after his graduation until 1917. In that year he became connected with the Bureau of Public Roads and since then has been engaged in administrative work in connection with the review of plans for federal-aid highway work. He was one of the small group of engineers who helped initiate the federal-aid plan of cooperation with the state in improving highways.

WILLIAM A. BUYS, 53, WPA district office engineer at Smithfield, N. C., died Sept. 25. Following his graduation with a civil engineering degree from North Carolina State College in 1906, Buys became assistant engineer for the Norfolk Southern R. R. and aided in the construction of the Pamlico River bridge at Washington, N. C. Later he served as engineer for the Interstate Cooperage Co. at Belhaven, N. C., and became manager of the firm in 1928.

GERALD J. WAGNER, former city engineer and city service director at Grand Rapids, Mich., died last week at the age of 53. Wagner graduated from the University of Michigan in 1910 and was soon employed by the Metropolitan Street Railway Co. of New York City. Later he became assistant superintendent of the Grand Rapids-Muskegon Power Co. In 1917 he joined the Michigan Railway Co. and became superintendent of construction. For three years he was city engineer at Grand Rapids and then advanced to director of public service, a position from which he resigned in 1922 to establish the firm of G. J. Wagner & Co.

T. FRANK QUILTY, president of the Superior Materials Co., Chicago, and vice president of the Moulding-Brownell Corp., Chicago, died recently. From 1900 to 1903 he worked as a civil engineer with the City of Chicago. Later with the firm of John J. O'Heron & Co., general contractors, he engaged in the design and construction of the Division St. tunnel under the Chicago River, the approaches to the Louisville & Southern Indiana Ry. Co.'s bridge over the Ohio River at Jeffersonville, and various water supply systems throughout the United States.

ELMER B. DUVAL, construction engineer on the Brownville, Nebr., bridge project, was killed in an auto accident on Sept. 29. Duval had been working during the past few years in Nebraska and Iowa.

THOMAS E. WARD, road and highway contractor of Oklahoma City, died Sept. 26 at the age of 58. During the past several years he had built several hundred miles of state and federal highways in Oklahoma in addition to a large amount of city pavement. He was president of the Ward-Beekman Concrete Pipe Co. of Oklahoma City.

GLEN H. SMITH, 54, assistant superintendent of the City Light Department, Seattle Wash., was killed accidentally last month at Louisville, Ky. At the time he was on leave from his job on construction of Ross dam and the high tension lines carrying power to Seattle from the Skagit project, having been with the City Light Dept. since 1907. Smith's body was cremated and his ashes were placed in a permanent resting place in the small concrete monument at the top of Section 12 of Ruby dam.

LIEUT. FRANCIS L. HILL, 53, Canadian engineer having been connected with the construction of power plants at Ruskin and Stone Lake and the Lions Gate Bridge, died recently in Vancouver, B. C.

SAMUEL ECKELS, chief engineer of the Pennsylvania State Highway Department from 1927 to 1935, died in Pittsburgh Sept. 23 at the age of 55. Eckels was a graduate of Washington and Jefferson College with the class of 1905 and a past president of the Association of North Atlantic Highway Officials. After leaving the Highway Department, he became chief engineer with the Allegheny County Authority and for the past few years had been engaged in consulting work with offices in Pittsburgh.

DANIEL T. WEBSTER, former vice president of the New York Building Congress, died at his home in White Plains, N. Y., Sept. 23. Webster was manager of the construction division of the United States Housing Corporation during the World War. At one time he was engaged in the contracting business in New York City.

Other civil engineers and contractors who have died recently include: NELS PETERSON, 85, Ridgefield, Ill., contractor; HUGH E. QUINLAN, 44, builder with the Quinlan, Robertson & Janin Construction Co., Montreal, Que.; T. E. NAISH, 74, retired Canadian military engineer of Penticton, B. C.; ROBERT E. WITTMAN, 40, building contractor with Momsen-Dunnegan-Ryan Co. of El Paso, Tex.; HENRY C. SLATER, 64, builder of Waterdown, Ont.; GEORGE R. DUNCA, 54, former building contractor of Sudbury, Ont.; EDWARD R. MACDONALD, 73, former building contractor at Regina, Sask.; FOWLER S. LOFTIN, 72, retired contractor of St. Louis, Mo.; C. S. FOWLER, 65, building contractor of High Point, N. C.; E. J. O'DONNELL, 64, retired building contractor of Milwaukee, Wis.; FINDLAY R. MCDONALD, 69, engineer and former chairman of the Vancouver, B. C., harbor board; FLETCHER C. CLARK, 56, former building contractor of Louisville, Ky., and EDWIN C. MOORE, 73, building contractor of Memphis, Tenn.

Wide World

WEST COAST SUFFERS FROM STORMS

SOUTHERN CALIFORNIA last week was hit by one of the worst autumn seacoast storms in the state's history. Total rainfall at Lost Angeles was 5.62 in., normal September precipitation being 0.10 in. At Mt. Wilson 13.70 in.

Damage to highways and telephone lines was extensive; exposed buildings along the seacoast suffered badly. Several lives were lost and estimates of the damage were as high as $1,000,000.

Land Condemnation Upheld For Grand River Dam

The right of the Grand River Dam Authority to condemn land through federal court action was upheld last week in the federal court at Tulsa, Okla. Several land owners had asked dismissal of land condemnation proceedings brought by GRDA in the federal court, contending that the court lacked jurisdiction on grounds that the Federal Power Commission license under which the GRDA took the action was void because the Grand River is not navigable. The authority held that Grand River is a tributary of a navigable stream and so affected interstate navigation. The court ruled that the power commission was within its powers in licensing the project.

The court added, however, that it "would seem that the power of the federal government over waterways is not unlimited, and that the stopping place is with the (immediate) tributary to the navigable stream."

CONTRACTS AND CAPITAL

ENGINEERING construction awards for the week, $53,928,000, are 24 per cent above a week ago, but 21 per cent below the volume for the corresponding week last year.

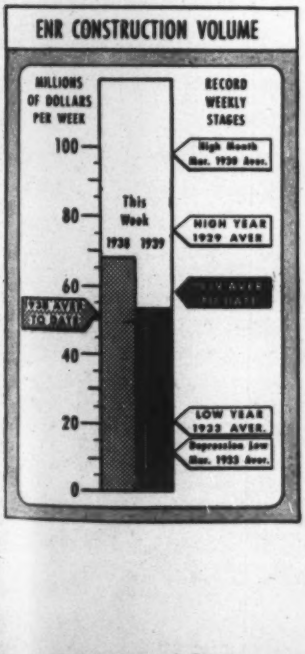
Construction volume for 1939 to date totals $2,319,180,000, a 12 per cent increase over the $2,067,714,000 reported for the initial 40-week period last year.

Private awards for the week top the preceding week by 15 per cent, and are 13 per cent higher than in the 1938 week. The increased volume of industrial building construction is responsible for the gain over last year, and this, in combination with commercial building is responsible for the increase over a week ago. Public awards are 29 per cent higher than in the previous week, but 30 per cent under a year ago.

In the classified construction groups, sewerage, industrial buildings, commercial building and large-scale private housing, public buildings, and earthwork and drainage are above their respective volumes of a week ago, and industrial buildings and earthwork and drainage top their totals of a year ago.

New capital for construction purposes for the week totals $5,986,0000, a decrease of 88 per cent from the volume of a year ago. The current week's new financing is made up of $3,544,000 in state and municipal bonds, and $2,442,000 in corporate security issues.

New construction financing for the year to date, $2,184,938,000, is 31 per cent below the $3,163,566,000 reported for the 40-week period last year.



CONTRACTS

(Thousands of dollars)

	Week Ending Oct. 6 1938	Sept. 28 1939	Oct. 5 1939
Federal	$11,197	$2,694	$15,660
State & Municipal	41,503	25,880	21,085
Total public	$52,700	$28,574	$36,745
Total private	15,254	14,937	17,183
TOTALS	$67,954	$43,511	$53,928
Cumulative 1939 (40 weeks)			$2,319,180
1938 (40 weeks)			$2,067,714

Note: Minimum size projects included are: Waterworks and waterways projects, $15,000; other public works, $25,000; industrial buildings, $40,000; other buildings, $150,000.

NEW PRODUCTIVE CAPITAL

	Cumulative 1938 40 Wk.	1939 40 Wk.
NON-FEDERAL	$2,026,862	$1,056,910
Corp. securities	332,077	183,846
State & Mun.	459,865	416,341
R.E.A. loans	51,558	89,445
R.F.C. loans	97,391	4,315
P.W.A. allot.	681,664	.....
U.S.H.A. loans	202,807	172,963
Fed. Aid—Hwys.	201,500	190,000
FEDERAL	$1,136,704	$1,128,028
TOTAL CAPITAL	$3,163,566	$2,184,938

FHA MORTGAGES

	Week Ending Oct. 1 1938	Sept. 23 1939	Sept. 30 1939
Selected for appraisal	$22,578	$22,649	$.....*
Cumulative 1939 (39 weeks)			$.....*
1938 (40 weeks)			$759,865

* Subject to revision.

ENR INDEX NUMBERS

Index Base		1913	1926
Construction Cost	Sept.	234.97	112.95
Building Cost	Sept.	196.61	106.28
Volume	Aug.	228	100

Missouri Studies Gas Tax Revision

Plan advanced to raise $6,000,000 for city street and county road improvements

The Missouri State Highway Commission is studying a plan advanced by a committee representing agricultural, municipal and petroleum interests which its sponsors say would provide $3,000,000 a year to Missouri cities for street construction and a like amount to Missouri counties for road building.

The essential feature of the plan is to increase the state gasoline tax from two cents per gallon to three cents and to eliminate city gasoline taxes, with the added revenue from the one-cent tax being set aside in a special fund for distribution among counties and municipalities. Increasing the tax is expected to provide an additional $6,000,000 yearly. The share each city would get would be according to the ratio of its population to the total population of all cities and towns of 500 population or over. The proportion each county would get would be in accordance with factors yet to be determined.

Farm to market road construction by the highway commission would be terminated except on projects under contract, all building of local roads would be done by the county through their portion of the gasoline tax revenue. The remaining two cents of the tax, along with automobile licenses and registration fees, would be used by the state to pay fixed charges, cost of collection, administration and enforcement of the tax and the cost of maintaining, constructing and improving the present state highway system of about 15,000 miles of road.

At present the Missouri cities and towns, including St. Louis, receive no state highway aid except in unusual cases where money is provided for improvement or extension of state highways along city boundaries. The proposal which would change this arrangement would come about by a constitutional amendment approved by the voters of the state at the November elections next year.

• • •

$1,123,000 Bid Approved For Baltimore Housing

The USHA last week approved the base bid of $1,123,000 of the Consolidated Engineering Co., Inc., Baltimore, for the construction of a 298-unit slum clearance and housing project in Baltimore.

CONTRACT UNIT PRICES

What contractors are bidding on different kinds of construction work

HIGHWAYS, MAINE

OWNER: Maine State Highway Commission, Augusta, Me., L. D. Barrows, Chief Engineer; F. A. LeBlanc, resident engineer.

PROJECT: Bituminous macadam (emulsified asphalt) surfacing 2.2 miles of Monticello Highway, U. S. Route 1, from Littleton line to Meduxnekeag River. Roadway 20-ft. wide, with 3-ft. gravel shoulders. Bituminous surface 3-in., on 5- to 7-in. crushed stone base, and 18- to 24-in. gravel base.

CONDITIONS: Contractor to furnish all materials and finish work in 115 working days. Rail and highway transportation available. Minimum wages are: skilled, 80c. per hr.; semi-skilled, 50c. per hr.; and common, 40c. per hr.

BIDS: Four bids were received July 12, 1939, ranging from the contract low of $99,188 to $112,008. Contract awarded August 4.

LOW BIDDERS:

1. Wyman & Simpson, Inc., Augusta, Me..... $99,188
2. Bridge Constr. Corp., Augusta, Me..... 99,807
3. W. H. Hinman, Inc., No. Anson, Me..... 100,111

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Unclass. excavation	26,000 c. y.	$0.82	$1.00	$1.00
2. Remove trees	5 ea.	10.00	10.00	8.00
3. Excav., struct	1,040 c. y.	1.00	1.50	1.40
4. Rock excav., struct	80 c. y.	4.00	10.00	4.00
5. Common borrow	5,500 c. y.	.35	.25	.40
6. Gravel borrow	1,000 c. y.	.60	.50	.65
7. Gravel sub-base	550 c. y.	.80	.70	.75
8. Gravel base course	14,900 c. y.	.75	.70	.75
9. Stone base course	1,025 c. y.	2.00	1.50	1.75
10. Cr. stone base course	4,334 c. y.	4.00	3.75	3.90
11. Gravel surface course	650 c. y.	1.50	1.00	1.25
12. Bitum. treatment, type A	6,450 gal.	.19	.15	.16
13. Bitum. macadam surf. course	2,502 c. y.	4.00	4.00	4.00
14. Emulsified asph., applied	78,700 gal.	.14	.13	.12
15. Class A concrete	19 c. y.	23.00	20.00	20.00
16. Class B concrete	18 c. y.	20.00	20.00	20.00
17. Reinforcing steel, struct	13,270 lb.	.06	.05	.05
18. Cement rubble masonry	71 c. y.	15.00	12.00	15.00
19. 12-in. corr. met. pipe	146 l. f.	1.30	1.20	1.20
20. 18-in. corr. met. pipe	34 l. f.	1.80	1.75	1.70
21. 24-in. corr. met. pipe	70 l. f.	3.10	2.75	2.60
22. Relay corr. met. pipe	148 l. f.	.50	.25	.25
23. 12-in asph. coat. corr. met. pipe	704 l. f.	1.45	1.35	1.30
24. 15-in. asph. coat. corr. met. pipe	294 l. f.	1.80	1.65	1.60
25. 18-in. asph. coat. corr. met. pipe	292 l. f.	2.20	2.00	1.90
26. 24-in. asph. coat. corr. met. pipe	46 l. f.	3.50	3.00	3.00
27. Drop inlet, type A	1 ea.	70.00	50.00	45.00
28. Drop inlet, type B	2 ea.	100.00	50.00	45.00
29. Catch basins	13 ea.	90.00	70.00	70.00
30. Underdrain, type B	400 l. f.	1.40	1.30	1.25
31. Underdrain outlets	100 l. f.	.70	1.00	.65
32. Grouted stone gutter	2,550 s. y.	2.00	2.00	1.75
33. Wire cable guard rail	2,880 l. f.	.40	.38	.35
34. Anchorage, guard rail	18 ea.	10.00	8.00	10.00
35. Anchorages, at bridges	2 ea.	18.00	10.00	14.00
36. Loam	100 c. y.	2.00	1.00	1.00
37. Sodding	2,150 s. y.	.44	.40	.40
38. Project markers	2 ea.	10.00	10.00	10.00
39. Right-of-way monuments	6 ea.	7.00	5.00	3.00
40. Concrete curb, gutter	3,164 l. f.	1.15	1.25	1.30
41. Premixed tar gravel surf. course	1,175 s. y.	.20	.40	.20
42. Tar, premixed tar grav. surf. crse	1,775 gal.	.30	.40	.13

INTAKE CONDUIT AND CRIB TOLEDO, OHIO

OWNER: City of Toledo, W. F. Harris, Director of Public Service, Toledo, Ohio. Greeley & Hansen, Chicago, engineers.

PROJECT: Constructing Lake Erie water intake conduit and crib, Division F, consisting of 15,500 ft. of 9-ft. diameter reinforced concrete pipe, of which approximately 11,540 ft. is to be in subaqueous tunnel in lake.

CONDITIONS: Contractor to furnish all materials and complete project in 300 days. Rail, highway and water transportation available. Wages on project are: skilled, $1.62 per hr.; semi-skilled, $1.00 per hr.; and common, 75c. per hr.

BIDS: Bids were asked July 12, 1939, on four types of conduit, earth tunnel, rock tunnel, steel pipe, and reinforced concrete pipe. Three diameters were considered, 8 ft. 8 in.; 8 ft. 2 in.; and 7 ft. 8 in., on the rock tunnel; and 9 ft., 8½ ft. and 8 ft., on the other types. No bids received on earth tunnel type construction. One bid on rock tunnel, of $105.00 per lin. ft. for 8 ft. 8 in. dia.; $104.50 per ft. for 8½ ft. dia.; and $104.00 for 7 ft. 8 in. dia. Three bids were received on steel pipe construction, ranging from $1,905,472 to $1,941,852, on the 9-ft. pipe. Two bids received on reinforced concrete pipe structure, $1,847,341, the contract low (awarded July 27), and $1,951,801.

LOW BIDDERS:

1. Merritt, Chapman & Scott, New York, N. Y. (concrete) $1,847,341
2. C. B. Moon Co., Cleveland, Ohio (steel) 1,905,472
3. Great Lakes Dredge & Dock Co., Cleveland, Ohio (steel) 1,916,500

GENERAL CONSTRUCTION

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Earth excavation	1,440 c. y.	$3.75	$1.00	$2.00
2. Reinforcing steel	300,000 lb.	.05	.06	.06
3. Reinforcing mesh	800 lb.	.12	.10	.10
4. Class A-1 concrete	3,550 c. y.	18.36	29.00	30.00
5. Class A-2 concrete	1,460 c. y.	11.00	29.00	12.00
6. Class B concrete	100 c. y.	19.00	29.00	13.50
7. Precast concrete	5 c. y.	38.00	29.00	50.00
8. Rubbed finish	100 s. f.	.19	.25	1.50
9. Structural steel	160,000 lb.	.11	.08	.09
10. Misc. steel and iron	5,500 lb.	.30	.10	.12
11. Iron castings	12,000 lb.	.12	.15	.15
12. Superstructure	L.S.	54,911.00	65,196.00	56,000.00
13. Heating equipment	L.S.	3,729.00	3,000.00	2,700.00
14. Elec. work and storage battery	L.S.	5,284.00	3,300.00	3,200.00
15. Marine light equipment	L.S.	1,028.00	1,700.00	1,500.00
16. Gasoline engine generator	L.S.	1,016.00	1,700.00	1,700.00
17. Refrigerating equipment	L.S.	563.00	600.00	600.00
18. Sanitary waste containers	L.S.	1,020.00	2,000.00	1,300.00
19. Boat derrick and hoist	L.S.	2,286.00	2,500.00	3,000.00
20. Field painting	L.S.	2,120.00	2,000.00	3,500.00
21. Cofferdam, intake crib	L.S.	102,139.00	244,000.00	130,000.00
22. Field office buildings (2)	L.S.	16,743.00	18,000.00	14,000.00
23. Conc. bridge, Yondota Rd.	L.S.	11,704.00	10,080.00	12,000.00
24. Roadbed construction	30,000 c. y.	.85	.90	.50
25. Stone fill, roadbed	5,000 c. y.	1.88	2.00	1.50
26. Crushed stone or slag, pavmt	3,000 c. y.	2.58	5.50	3.00
27. Seal coat, pavement	11,300 s. y.	.40	.35	.16
28. Lumber and timber	7 M.b.m.	195.00	150.00	200.00
29. Timber piles	600 l. f.	.90	1.25	2.00
30. Steel piles	18,000 lb.	.05	.06	.06
31. Additional rock excav	10 c. y.	5.00	10.00	20.00
32. Misc. brick masonry	10 c. y.	25.00	50.00	50.00
33. Selected fill material	100 c. y.	2.10	3.00	1.50
34. Wood sheeting, left in place	1 M.b.m.	45.00	200.00	50.00
35. Steel sheeting, left in place	500 lb.	.02	.10	.03
36. Wood sheet piling	1 M.b.m.	100.00	200.00	200.00
37. Steel sheet piling	500 lb.	.05	.10	.05
38. Rock riprap	300 ton	5.00	20.00	6.00
39. Additional earth excav	360 c. y.	3.75	1.00	2.00
40. Additional reinf. steel	8,700 lb.	.05	.06	.06
41. Additional Cl. A-1 concrete	213 c. y.	18.36	29.00	30.00

CONDUIT

Item	Quan.	Unit Prices (1)	(2)	(3)
Reinforced Concrete Pipe — Alternate C				
1. Subaqueous reinf. conc. pipe and circ. conc. intake conduit in earth tunnel, 9 ft. dia	15,443 l. f.	$94.05*	$86.57	.....
2. Same, 8½ ft. dia	15,443 l. f.	93.20	83.24	.....
3. Same, 8 ft. dia	15,443 l. f.	92.45	80.56	.....
4. Surge well for earth tunnel at El. 535	L.S.	10,000.00	3,000.00	.....
Steel Pipe — Alternate S				
1. Subaqueous steel pipe and circ. conc. intake conduit in earth tunnel, 9 ft. dia	15,443 l. f.	$100.17	$83.57	$94.92
2. Same, 8½ ft. dia	15,443 l. f.	98.60	80.24	91.77
3. Same, 8 ft. dia	15,443 l. f.	97.00	77.56	88.62
4. Surge well for earth tunnel at El. 535	L.S.	10,000.00	3,000.00	10,000.00

* *Contract awarded for 9 ft. reinf. concrete pipe.*